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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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IS : 4501 - 1981

Indian Standard
SPECIFICATION FOR
APRONS, RUBBERIZED, ACID
AND ALKALI RESISTANT
(*First Revision*)

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Indian Standard
SPECIFICATION FOR
APRONS, RUBBERIZED, ACID
AND ALKALI RESISTANT
(First Revision)

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Indian Standard
SPECIFICATION FOR
APRONS, RUBBERIZED, ACID
AND ALKALI RESISTANT
(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 13 March 1981, after the draft finalized by the Rubber Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

0.2 This standard was first published in 1967. The requirements for finished fabric and coating were not stipulated in the standard and reference to IS:5915 was given which was under preparation at that time. In this revision suitable type, quality, grades covered under IS:5915-1970* for preparation of these aprons have been stipulated.

0.3 Acid and alkali-resistant rubberized aprons are used by workers in chemical laboratories and in industrial establishments for protection against contact of the wearing apparel and skin with acids and alkalis. In order that these aprons effectively resist the action of acid and alkali and do not allow them to corrode through the apron to affect clothing or skin, the requirements of the material has to be defined and established. The general design of these aprons should be emphasized keeping in view comfortable wear as also avoiding use of superfluous material.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling for acid and alkali-resistant rubberized aprons.

*Specification for single texture rubberized waterproof fabrics.

†Rules for rounding off numerical values (*revised*).

2. DESIGN

2.1 This standard prescribes rubberized aprons of two designs depending upon the requirements of the purchaser.

Design 1 — with straps and buckles, rounded neck and sleeve portion.

Design 2 — with tying tapes, straight neck and semi-rounded sleeve portion.

3. MATERIAL

3.1 Waterproof Rubberized Double Faced Fabric — Conforming to the requirements of Type 2, Quality 2, Grade B of IS : 5915-1970*.

3.2 Sewing Cotton — Conforming to the requirements of variety No. 31-60S/6 (100 d tex × 6) of IS : 1720-1978†.

3.3 Eyelets — Made of aluminium alloy size No. 24 of IS : 4084-1978‡.

3.4 Buckles — Suitably nickel plated.

4. REQUIREMENTS

4.1 Colour — The finished material shall be white or of a suitable colour on two sides as agreed to between the purchaser and the supplier.

4.2 Workmanship and Construction

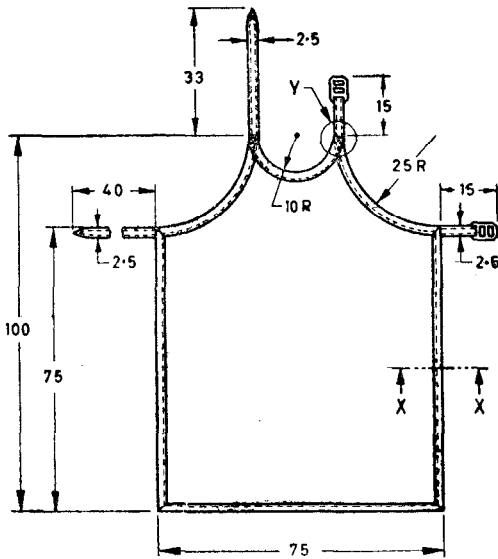
4.2.1 Design 1 — The make up and shape of the aprons shall conform generally to Fig. 1. The body of the apron shall be made from rubberized cloth, properly vulcanized and in accordance with 3.1. The neck and the sleeve portion shall be rounded as shown in Fig. 1 to accommodate wearer's neck and arm corner. Each apron shall have a strap at the arm and neck portions. The strap shall be folded and sewn at both sides as specified in Fig. 1. Each strap shall be provided with a buckle suitably nickel plated, with sliding jaw. The strap shall pass freely in the buckle. It shall be stitched with lock stitch having 32 stitches per dm.

4.2.2 Design 2 — The make up and shape of the aprons shall conform generally to Fig. 2. The body of the apron shall be made from rubberized cloth properly vulcanized and in accordance with 3.1. The strengthening pieces at the top and arm corners of the aprons shall be of the same material as that of the body and neatly stitched to the body of the apron. Each apron shall have four eyelets, one each at both arm corner and neck corner. The eyelets shall be made of aluminium alloy of size No. 24 of IS : 4084-1978‡. The eyelets shall be properly fixed on the strengthening pieces in the position shown in Fig. 2. It shall be stitched with lock stitch having 32 stitches per dm.

*Specification for single texture rubberized waterproof fabrics.

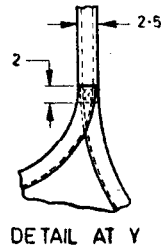
†Specification for cotton sewing threads (*second revision*).

‡Specification for eyelets and washers (*sail*) (*first revision*).

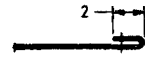


All dimensions in centimetres.

FIG. 1 RUBBERIZED APRON WITH STRAPS



DETAIL AT Y



ENLARGED SECTION XX

5. PACKING AND MARKING

5.1 The aprons shall be dusted with talc and packed suitably as agreed to between the purchaser and the supplier.

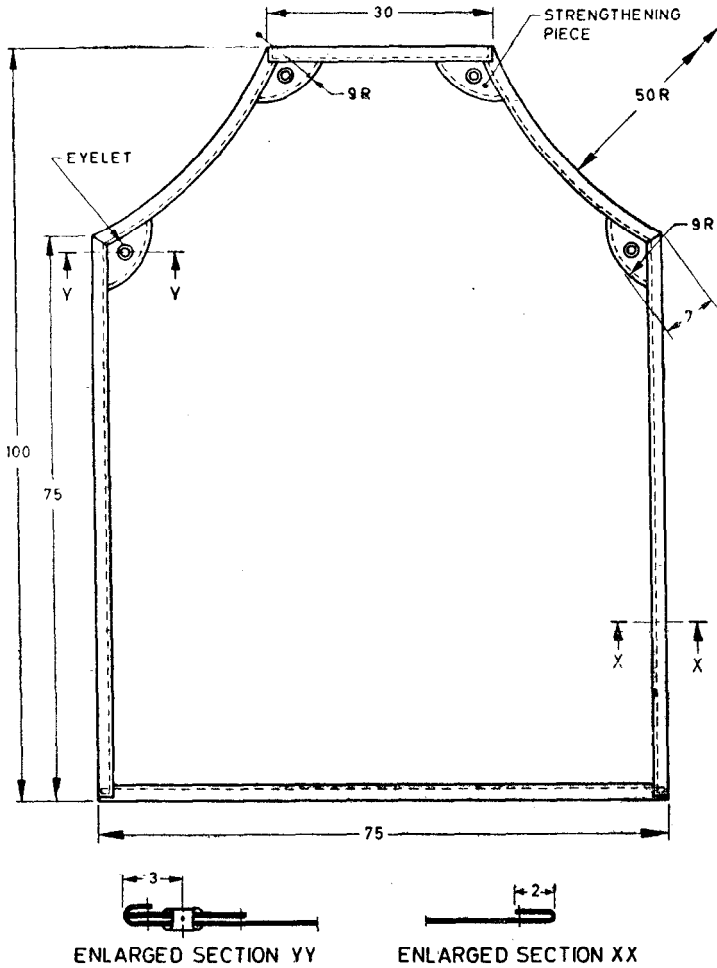
5.2 Each apron shall be clearly marked inside with manufacturer's name or recognized trade mark, if any. The ink shall be non-irritating to skin and shall not impair the quality of aprons.

5.2.1 The aprons may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. SAMPLING AND CRITERIA FOR CONFORMITY

6.1 Lot — All the aprons of the same design and belonging to the same batch of manufacture shall be grouped together to constitute a lot.



All dimensions in centimetres.

FIG. 2 RUBBERIZED APRON WITH EYELETS

6.2 For ascertaining conformity of the material to the requirements of this specification, samples shall be tested from each lot separately.

6.3 The number of aprons to be selected from a lot shall depend on the size of the lot and shall be according to Table 1.

TABLE 1 SCALE OF SAMPLING AND PERMISSIBLE NUMBER OF DEFECTIVES

NO. OF APRONS IN THE LOT	FOR COLOUR, CONSTRUCTION AND WORKMANSHIP		NUMBER OF TESTS TO BE CONDUCTED FOR PROOFING AND FINISHED FABRIC ACCORDING TO IS:5915-1970*
	Sample Size	Acceptance Number	
(1)	(2)	(3)	(4)
Up to 50	8	0	1
51 to 100	13	1	1
101 to 300	20	2	2
301 and above	32	3	3

*Specification for single texture rubberized waterproof fabrics.

6.3.1 The aprons shall be selected from the lot at random. In order to ensure the randomness of selection, procedures given in IS:4905-1968* may be followed.

6.4 Number of Tests and Criteria for Conformity

6.4.1 Colour, Construction and Workmanship — Each apron selected according to col 2 of Table 1 shall be examined for these requirements. An apron failing in one or more of these requirements shall be regarded as defective. The lot shall be considered as conforming to these requirements if the number of defectives found in the sample is less than or equal to the corresponding acceptance number given in col 3 of Table 1.

6.4.2 The lot having been found satisfactory according to **6.4.1** shall be further tested for proofing compound and finished fabric according to Type 2, Quality 2 and Grade B of IS:5915-1970†. The number of tests to be conducted for each of these requirements shall be according to col 4 of Table 1. For this purpose, the required number of aprons shall be selected from those already examined according to **6.4.1** and found satisfactory. The lot shall be declared as conforming to the requirements of this specification, if no failure occurs in any test for both the requirements; otherwise not.

*Methods for random sampling.

†Specification for single texture rubberized waterproof fabrics.

INDIAN STANDARDS

ON

TREATED FABRICS

IS:

- 1001-1956 Fuel pump diaphragm fabrics: (a) synthetic rubber proofed, (b) varnish proofed
- 1259-1977 Vinyl coated fabrics (*second revision*)
- 1421-1964 Cellulose nitrate coated fabrics (*revised*)
- 2037-1962 Tracing cloth
- 2089-1977 Common proofed canvas/duck and paulins (tarpaulins) (*second revision*)
- 2244-1972 Glossary of terms relating to treated fabrics (*first revision*)
- 2789-1972 Special proofed paulins (tarpaulins) (*first revision*)
- 3322-1965 PVC-coated fabrics for foul weather clothing
- 3768-1966 PVC-ventilation tubing (flexible ducting)
- 4355-1977 Fire resistant brattice cloth (*first revision*)
- 4501-1967 Aprons, rubberized, acid and alkali resistant
- 4810-1968 Fumigation sheets and covers, rubberized
- 5915-1970 Single texture rubberized waterproof fabrics
- 6110-1971 Double-texture rubberized fabrics
- 6803-1972 Special proofed canvas and duck
- 7016 Methods of test for treated fabrics:
 - (Part I)-1973 Roll characteristics
 - (Part II)-1973 Determination of breaking strength and extension at break
 - (Part III)-1973 Tear strength
 - (Part IV)-1973 Resistance to damage by flexing
 - (Part V)-1973 Coating adhesion
 - (Part VI)-1973 Bursting strength
 - (Part VII)-1973 Water proofness
 - (Part VIII)-1973 Accelerated ageing
- 8698-1977 PVC fabrics for footwear fabrics
- 8699-1977 Expanded vinyl coated fabrics

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Definition
Force	newton	N	1 N = 1 kg. m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s. (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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